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STATE OF KELANTAN.

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# THE ANNUAL REPORT

ON THE

MEDICAL DEPARTMENT

FOR THE YEAR

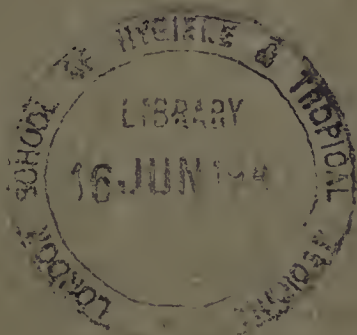
1932

BY

DR. L. W. EVANS,

CHIEF MEDICAL OFFICER.

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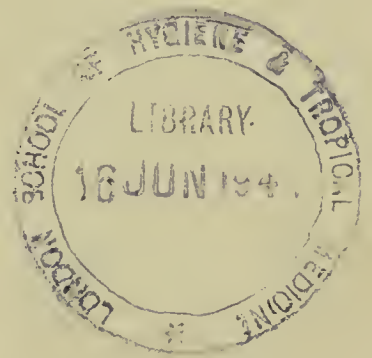
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## SECTION I.

### I. ADMINISTRATION.

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#### A. STAFF.

(1) Dr. L. W. Evans held the appointment of Chief Medical Officer; Dr. J. H. Bowyer that of Health Officer; and Miss M. Brebner that of Matron in charge of the European and Native Female Hospitals throughout the year.

(2) Dr. W. J. Geale acted as Medical Officer, Ulu Kelantan.

(3) Mr. E. P. Canagasaby and Mr. G. K. Pillay remained as Hospital Assistants at the Kota Bharu Hospital; Mr. Sie Sing Chang at Kuala Krai Hospital; Mr. Go Boi Gee was in charge of the Pasir Puteh Dispensary and Mr. A. Nadarajah acted as Deputy Health Officer, Tumpat.

#### Retirements.

(4) The following members of the Staff were invalided out of the service during the year:—

Che Mahmood

Nik Ismail

Hamid

Mat Akib

of these Che Mahmood, Nik Ismail and Mat Akib had been with the department since its inception.

(5) Mrs. Lee Keng Chuan, Nurse Probationer left the service on 1. 7. 32.

#### Appointments.

(6) Abdul Rahman bin Mohamed Amin, Peon of this department was promoted to the post of vaccinator as from 16. 8. 32.

#### Leave.

(7) The following members of the Staff were granted vacation leave:—

Che Mahmood from 14. 6. 32 to 25. 7. 32.

Mrs. J. Pestana from 13. 9. 32 to 4. 10. 32.

Miss A. Oliveira from 13. 12. 32 to 2. 1. 33.

#### B. ORDINANCES AFFECTING PUBLIC HEALTH.

(8) No new ordinance affecting public health was passed by the State Council during the year, but an amendment to the Deleterious Drugs Enactment (No: 12 of 1930) was passed on 18th October, 1932 to add various preparations of morphine to the schedule of Deleterious Drugs (Notification No: 63 of 1932).

#### C. FINANCIAL.

(9) The total revenue collected during the year was \$9933.84 compared with \$10201.77 in 1931 and \$14709.93 in 1930.

(10) This progressive decrease is accounted for by the further reduction in the number of "paying patients" admitted to the Hospitals.



All Malays, and indigent patients of other races, are given free treatment as out-patients and also as in-patients if admitted to the general wards (3rd Class).

Owing to trade depression practically all patients admitted to the general wards at present are "indigent" and so contribute nothing towards cost of food or treatment. Out of 5545 cases admitted to these wards, apart from 25 Estate and 528 railway labourers, only 32 patients could pay.

(11) The revenue is derived from:—

Hospital Fees and Sale of Medicines	..	..	..	\$9348.93
Fees for Licences Etc.	..	..	..	\$584.91
			Total	<u>\$9933.84</u>

(12) The total expenditure was \$170717.39 (10.18% of total <sup>e</sup>revenue of State) compared with \$199502.50 in 1931 and \$209281.18 in 1930.

(13) This reduction has been brought about by rigorous economy in use of dressings etc; a slight reduction in the diets; only admitting to hospital cases who cannot be treated as out-patients and reducing the Staff wherever possible.

No member of the Staff who retired or <sup>who was</sup> boarded out was replaced, and several of the menial Staff including all assistant cooks were dispensed with.

(14) It is difficult to economise in drugs and dressings but this year a considerable amount was saved by using Tota Quinine (as proposed by the Malaria Commission, Health Organisation, League of Nations), for out-door distribution by the Travelling Dispensary. This is only half the cost of the better quinine preparations.

(15) This reduction in expenditure is in spite of the fact that (chiefly owing to the activities of the Travelling Dispensary) the number of out-patients has greatly increased.

Cost of such out-patient treatment is naturally very high in a country where the great majority of adults seek treatment for yaws or malaria, while children are brought for worm treatment or vaccination — all of which require expensive drugs.

Thus the cost per attendance (for drugs alone) of treatment by the Travelling Dispensary is 8½ cents while in the fixed Dispensaries it is 8¾ cents per head.

The average daily cost of drugs and dressings supplied to in-patients is approximately the same amount but here there is an additional cost of 14 cents per day for diets.

Details of revenue and expenditure are given in Appendix II.

## SECTION II.

## PUBLIC HEALTH.

---

### A. GENERAL REMARKS.

(16) No satisfactory index of the general health of the State is available, as Birth and Death registration is still imperfect, and hospital admissions and dispensary attendances are partly dependant on other factors.

(17) There was no epidemic of the more dangerous infectious disease<sup>s</sup> and the commoner causes of ill health do not appear to have been more prevalent than usual with the exception of Pneumonia which was definitely more prevalent and severe (see para 30), than in 1931.



B. INFECTIOUS AND COMMUNICABLE DISEASE.

(a) Mosquito-borne Diseases.

(18) Yellow fever does not occur.

(19) Dengue was again conspicuously absent.

(20) **Malarias**:— appear to have been definitely less prevalent than in 1931.

(21) The proportion of malaria cases to the total admissions to hospital from all diseases was:—

15.65% in Government Hospitals (compared with 17.44% in 1931 and 25.3% in 1930).

21.3% in Estate Hospitals (compared with 31.3% in 1931 and 46.2% in 1930).

(These figures include cases of “undiagnosed fever”).

(22) Out of 135 films showing parasites examined in Kota Bharu Hospital 33 showed *P. vivax* 77 *P. falciparum* and 17 *P. malaria* while 8 showed mixed benign and sub-tertian infections.

The proportion of sub-tertian infection is undoubtedly higher than these laboratory findings indicate, as parasites are not always found in typical cases such as cerebral malaria.

(23) 8 cases of “cerebral malaria” were admitted to Kota Bharu Hospital, most of whom were brought in unconscious. 4 recovered with large and repeated doses of quinine intramuscularly.

(24) One case of “blackwater fever” was admitted to Kuala Krai Hospital and recovered. 5 cases were treated in the Duff Development Company Limited Estate Hospital; one of whom died. Of these five cases 3 were admitted from Kenneth Estate, 1 from Lower Sokor and 1 from Kerilla.

(b) Infectious Diseases.

(25) There were no cases of Cholera or Plague.

(26) **Small-Pox** — No case occurred during the year.

(27) **Chicken-Pox** — 24 cases occurred and were isolated locally. The only real out-break occurred in Gua Musang in September. This town was visited by Chief Medical Officer on 24th and 25th September. There were 12 cases, all but 2 being young chinese children, living in 3 adjacent Shop-Houses. Cases and contacts were isolated in the houses concerned, and the school was closed for 2 weeks.

No further cases occurred.

(28) **Measles** — 3 cases were seen during the year. This disease is very common; cases are usually mild and are not reported by the Malays, who regard it as a minor ailment.

(29) **Mumps** — Although only 1 case was seen, this disease is also undoubtedly common, being like measles regarded as a minor ailment by Malays.

(30) **Pneumonia** — There were 174 cases with 38 deaths admitted to the Government Hospitals during the year compared with 102 with 27 deaths in 1931.

(31) **Pulmonary Tuberculosis** — This is common in Kelantan, and in most cases proves fatal. The wet monsoon weather appears to have a definitely deleterious effect on these cases.

This year 110 cases were admitted to the Government Hospitals of whom 29 died. The majority return to their houses, (76 out of the above 110) – and may or may not continue treatment as out-patients. 2 Government Officers were boarded out of the service on account of this disease.

(c) Other communicable Diseases.

(32) Yaws.— Although owing to treatment in the early stages of this disease the crippling and disfiguring sequaelae are now less commonly seen, yaws is still common in most areas.

In districts where treatment is available however e. g. those within reach of a dispensary or visited by the Travelling Dispensary cases are becoming less common. Thus out of 2314 children examined in Malay Vernacular Schools, active yaws was seen in only 3.8% compared with 4.6% in 1931. Healed scars of past infection were seen in 47% of the children.

(33) It has been usual, during the last few years to comment on the popularity of treatment for this disease but it is strange that this is not even greater. The fact that young children are allowed to remain untreated in villages near dispensaries, even now that the success of the treatment is universally known, can only be ascribed to laziness on the part of the parents or total disregard for the disfigurement which will be brought about by letting the disease run its course. It is disappointing that in spite of all the trouble and expense taken by the Government to carry treatment to these people, young children are still seen with large patches of ulceration on their mouths and noses which will lead to disfiguring scars which could have been prevented by an injection of salversan, and it is irritating to be met with an entirely disinterested attitude in the parents when their attention is drawn to this fact.

(34) Such an attitude is of course becoming less common and is confined to the least intelligent of the peasants, as indicated by the numbers of cases treated. These for the last 5 years are:—

1928	=	7509
1929	=	8288
1930	=	16581
1931	=	21004
1932	=	26468

The attendances this year were distributed as follows:—

Travelling Dispensary	=	14666
Kota Bharu	=	3626
Pasir Puteh	=	3054
Tumpat	=	1690
Kuala Krai	=	3432

(35) Leprosy.— As is pointed out in Section VII control of Leprosy in Kelantan is one of the most difficult problem still to be solved. It is not uncommon among the Malays, and out of 19 new cases seen during the year 14 were Malays. Of these 2 were Government Officers.

(36) Venereal Diseases.— These are common among all Asiatic races in the larger towns but are very rarely encountered in rural areas.

Thus these diseases accounted for 369 or 11.28% of admissions to Kota Bharu Hospital, and 115 or 6.11% of admissions to Kuala Krai Hospital, while only 0.23% of patients at Pasir Puteh Dispensary suffered from venereal disease and it was very rarely encountered in villages visited by the Travelling Dispensary.



(d) Helminthic Diseases.

(37) Round worm and hook worm infections are extremely common, but tape worm infection is rarely seen.

(38) In 3443 stool examinations (direct method) made in the Kota Bharu Hospital.

Tricocephalus dispar ova were <sup>found</sup> <del>seen</del> in	556
Ascaris ova	700
Ankylostoma ova	1663
Strangiloides intestinalis ova	56
Taenia	nil

(e) Dysentery and Diarrhoea.

(39) These accounted for 1.98% of cases admitted to Government Hospitals (compared with 2.78% in 1931).

(40) Bacillary dysentery appears to be uncommon and cases are rarely admitted to hospital but a few epidemics ascribed to this were reported from rural areas as mentioned in para 57.

(41) Out of 97 definite cases of dysentery the stools of which were carefully examined in the State Hospital, Kota Bharu, all showed Amoeba histolytica or its cysts.

C. VITAL STATISTICS.

(42) The Birth and Death Registration Enactment No: 6 of 1930 makes notifications of deaths within 12 hours and of births within 2 weeks compulsory.

All Police Stations and Penggawas are Deputy Registrars, while several European Estate Managers have been given the powers of Deputy Registrars for the Estates under their charge.

Notification Forms are forwarded from the above to the Registrar's Office (Chief Medical Officer) where they are registered.

(43) Unfortunately notification although improving is not yet satisfactory, especially in towns. Detection of delinquents is difficult and no prosecutions have been made for failure to report these events.

(44) Hitherto the cause of death has not been required on Death Notification Forms. It was thought that this might lead to reluctance to report in certain cases, owing to fear of interference, and, as the majority of cases are not seen by anyone capable of making a diagnosis, sacrificing this information was of little importance.

From January 1st 1933 however the cause of death will be given so that our Statistics will conform to the requirements of the Straits Settlements and Federated Malay States and comparative figures will be available for the Registrar General for Malaya.

(45) The proportion of deaths at various ages is also impossible to assess as the Malay keeps no record of his age. It is only rarely that parents of the agricultural class will even hazard an estimate of the age even of a young child. Malays are infants, children, adults or old. They attempt to estimate their age from some memorable event, but these are few and far between in Kelantan; for the present generation there are only the great wind (1880) the Tok Janggut rebellion (1915) and the 1926 — 1927 flood (Ayer Merah). Old people will merely give <sup>their</sup> the age as "Angin" meaning that they are of the "Great wind" period or may be a little

more exact and state that they had gone to school at the time of "Tok Janggut" or a mother will say that her child had "started wearing clothes" at the time of <sup>the</sup> "Great Flood".

(46) Infant-deaths may all refer to infants under one year of age or thereabouts, but with the present laxity of notification, the numbers of births and infant deaths are worthless from the point of view of infantile mortality.

(47) The Vital Statistics are given in Appendix IX more for comparison with other years than for their real value. They give a birth rate of 34.74 per 1000; a death rate of 17.93 per 1000; and an infantile mortality of 111.77 per 1000 births.

(48) Any balancing equation method of estimating population is therefore out of the question in Kelantan.

This has therefore been done by the geometrical progression method as recommended by the Director of Medical and Health Services, Straits Settlements.

The method is likely to prove fairly accurate for Kelantan (far more so than most parts <sup>of</sup> Malaya) for here migration is a minor factor, the resident Malay population accounting for 91% of the whole.

This method gives a total population of 369411 of whom 336201 are Malays.

Details are given in Appendix IX.

D. TABLE SHOWING THE SICK, INVALIDING AND DEATH RATES OF EUROPEAN AND NON-EUROPEAN OFFICIALS, 1932.

		Europs:	Non-Europs:
Total number of officials resident	...	28	1143
Average number resident	...	19.71	660.30
Total number on Sick List	...	6	434
Total number of days on Sick List	...	50	1742
Average daily number on Sick List	...	0.13	4.75
Percentage of sick to average number resident	...	0.007%	0.0071%
Average number of days on Sick List for each patient	...	8.3	4.01
Average sick-time to each resident	...	1.78	1.52
Total number invalided	...	nil	2.01
Percentage of invalidings to total residents	...	nil	2.04
Total deaths	...	nil	2
Percentage of deaths to total residents	...	nil	1.74
Percentage of deaths to total average number resident	...	nil	
Number of cases of sickness contracted away from residence	...	?	?



## SECTION III.

# HYGIENE AND SANITATION.

---

### A. GENERAL.

(49) The general sanitary work is under the control of the District Officers, but this was under <sup>the</sup> actual <sup>the</sup> direction of Dr. J. H. Bowyer who was also in direct charge of Anti-malarial Work.

(50) In towns scavenging is done by conservancy board coolies, assisted by convict labour, in Kota Bharu and Kuala Krai refuse is disposed of by incineration.

(51) In Kota Bharu and Kuala Krai conservancy is based on the single bucket system, night soil being removed in special lorries and disposed of by trenching outside the town limits. This work is on contract.

(52) In Kuala Krai, which is a small and comparatively new town, with a good layout, this is quite satisfactory.

(53) In Kota Bharu satisfactory conservancy in the old town area is not practicable. The main streets are narrow, and owing to the fact that the central areas behind the squares formed by the shop-houses are occupied by groups of malay dwelling houses, which in most cases abut against the back walls of the shops, it has not been possible to construct back lanes apart from narrow passages in one or two streets.

(54) While the population of Kota Bharu is nearly 15,000, and the number of occupied houses is given in the 1931 Census as 2,412 only 454 night soil buckets are provided by house-holders, (apart from Government Institutions) and 11 are provided by Government for public use.

(55) The new town area surrounding the New Market is well planned and after the fire which destroyed a considerable area of the old town in 1927, it was hoped that a town plan could be started in that area. Such a plan was drawn up and agreed to, but it was on rather ambitious lines, involving a new layout, which did not follow existing road lines. This scheme was found to be impracticable for various reasons.

(56) This year a new Advisory Town Board was appointed with a view to considering other proposals for town improvement. It was decided that as the old plan could not be followed, a more simple scheme should be adopted based on widening and making provision for back lanes along existing street lines.

Many of the main streets have been dealt with during the year. In these no repairs can be made to existing buildings, and as these are demolished, building must follow the new regulations with regard to type, distance from centre of road and provision for 14 foot back lane.

With the exception of a few shop-houses near the Railway Jetty, all shop-houses in the old town are of poor construction and design.

(57) There is no attempt at conservancy in rural villages, and sanitary measures are only enforced when disease—e. g. dysentery occurs, making such measures necessary.

Normally, Malay houses are raised only 2 to 4 feet above the ground. The ground under the houses is rarely cleaned, but, strange to relate, diseases which can be ascribed to insanitary conditions are rare with the exception of ankylostomiasis.

When <sup>re</sup> many cases of dysentery occur, it is usually found that the houses affected are of a more pretentious type, and raised about 8 feet. The areas under the houses are fenced in, and are used as shelters for cattle, giving rise to conditions,

which are little better than middens. In the 3 villages where such out-breaks occurred this year, the infected houses were of this type.

(58) Water Supply. — Water supply in all towns in Kelantan still depends on deep and shallow wells.

(59) Many water schemes for Kota Bharu have been considered and discarded on account of the cost. This year experiments have been made by the State Engineer with a view to constructing a suitable supply from deep wells, with a pipe line delivery, and it is hoped that this method will prove practicable.

(60) Housing and Town Planning. — All plans of houses in Municipal areas are submitted to the Medical Department for opinion re sanitary measures.

(61) Inspection and Control of Food — Slaughter houses, markets, dairies, etc. are inspected by the Health Staff and insanitary conditions dealt with.

## B. PREVENTIVE MEASURE.

### (a) Malaria.

(62) It has not been possible to extend anti-malarial work carried <sup>out</sup> by the Government Medical Department beyond <sup>a</sup> Kota Bharu and Kuala Krai.

(63) In Kota Bharu oiling of drains and casual water is relied upon.

(64) In Kuala Krai many areas where *A. maculatus* was found have been dealt with by surface or sub-soil drainage.

(65) Antil-Malarial Work on Estates is given in paras 75-77.

### (b) Epidemic Diseases.

(66) Small Pox Vaccination is done free of charge by Government Vaccinators who tour the State.

(67) The total number of vaccinations done during the year was 25,801. This is the largest number done in any year. Details are given in Appendix XI.

(68) Lymph supplied by the Institute for Medical Research, Kuala Lumpur was used.

### Cholera.

(69) There were no cases during the year.

As all out-breaks recorded in Kelantan started in April, May or June, it has now been the custom for many years to "pink" all wells in the larger towns with potassium permanganate at intervals throughout the dry season.

Cholera must be considered to be always a <sup>e</sup>manace, and Police, Penggawas, etc. are alert in reporting any suspected cases.

### (c) Helminthic Diseases.

(70) Apart from organised groups of labourers, which are usually given mass treatment twice a year, and treatment of all cases met with in the various hospitals and dispensaries, little can yet be done in the way of prophylaxis of hook-worm or of other helminthic diseases at present.

### (d) Control of Leprosy.

(71) Non-Kelantanese lepers are sent to Pulau Jerejak or Sungei Buloh.

(72) All remaining lepers must undertake to maintain themselves in insolation



which satisfies the Health Officer and to abstain from travelling in public vehicles, visiting licenced buildings or dealing in any trade prohibited by the Leper Enactment.

All such cases are reported to the Police who see that the patients undertaking is observed.

### Rabies.

(73) Rabies has been endemic in Kelantan for many years. During the present year, 2 rabid dogs were destroyed (the diagnosis being confirmed by examination of the brains in the Institute for Medical Research, Kuala Lumpur), and 5 people (all Malays) bitten by these dogs were given Pasteur treatment.

A dog "Muzzling Order" has been in force since May 6th <sup>and</sup> 832 dogs found at large, unmuzzled were shot by the Police.

Dog licences are only granted after Anti-rabies inoculations have been given.

### C. LABOUR CONDITIONS AND HEALTH OF ESTATES.

(74) Owing to several Rubber Estates being put on a "care and maintainance" basis, only 8 employed sufficient labour to come under the Indian Labour Enactment at the end of the year.

These continued to be visited by a Medical Officer (Dr. W. J. Geale) once a month, and were inspected each half year by the Chief Medical Officer.

(75) They have continued to make every endeavour to prevent the return of malaria, and the incidence of this disease has been very low. Out of 22 Europeans resident on Estates only 3 were admitted to hospital with malaria, while out of an average monthly labour force <sup>of</sup> 1935 including dependants, only 105 cases with 4 deaths were reported.

(76) Owing to financial difficulties oiling has had to be considerably restricted. Fortunately <sup>the</sup> excellent anti-malarial drains constructed on all Estates visited by Dr. W. J. Geale, with the co-operation <sup>of</sup> the Managers concerned, during past years and the care taken to maintain the "water tidiness" of these systems appears <sup>to</sup> have made such economy <sup>in</sup> oiling possible, although it must be regarded as risky.

Owing to the hilly nature of the country with numerous ravines and seepages, these Estates have from 7 to 15 miles of drains in the half mile Anti-malarial zones; in most Estates silting is rapid if the drains are neglected, and great credit is due to the Managers for maintaining them in excellent condition free from vegetation and with a good flow, with the restricted labour force available.

(77) All our Estates, owing to the ravines and seepages mentioned, are potentially very malarious, and any slackening <sup>in</sup> of supervision will undoubtedly lead to the unhealthy conditions of past years.

It is therefore to be regretted that Estates which have been put in a "care and maintainance" basis have found it necessary to dispense with the services of a Visiting Medical Officer.

(78) The mortality from all causes on the visited Estates was 17.05 per 1000 compared with 29.4 ~~in~~ in 1931. The death rate among Indians was 22.79 per mille compared with 41.2 ~~in~~ in 1931. Considerable attention has been given to care of infants and the high death rate of previous years has been reduced. This year only 6 deaths occurred among the 34 infants born (compared with 33 out of 73 births in 1931).

(79) Details of sickness on Estates are given in Appendix VIII.

(80) On all the Estates visited, every encouragement is given to labourers to grow fresh vegetables, and ground is allotted for this purpose on a generous scale.

On some, several acres of land is also allotted for cultivation of padi by the labourers for their own use.

(81) Schools, temples and creches are provided.

#### D. SCHOOL HYGIENE.

(82) There are 59 Malay Vernacular Schools in the State. Many of these are situated in Ulu Kelantan or Kelantan Bharu and are too inaccessible for routine inspection.

(83) 33 of the more accessible schools were visited (compared with 29 in 1931) and 2314 children examined (compared with 1856 in 1931).

(84) The health and cleanliness of the boys was on the whole good.

(85) Active yaws cases show a further reduction in number (3.80% compared with 4.6% in 1931) though healed scars of former infection were present in 47.01% of ~~en~~ the children.

(86) The spleen rate compares favourably with other parts of Malaya being only 5.31% (compared with 7.4% in 1931).

Only 4 schools showed a spleen rate of 20% or over - all inland areas between Kota Bharu and Kuala Krai (Kota 20%, Salor 29%, Pulai Chondong 20% and Kampong Machang 20%) while Kuala Krai had a rate of 12%.

Malaria is rare in the coastal villages, the spleen rate being nil at Bachok, Pengkalan Chepa and Cherang Ruku, while only one case was seen at Tawan and at Kampong Lembah.

(Report by H.O. in Appendix XII)

Even in coastal towns with a mixed population a low rate was found e. g. 5% at Tumpat and 4.8% at Pasir Puteh.

Kota Bharu itself has always enjoyed a low malaria incidence, and among children attending the Padang Garong School in Kota Bharu the spleen rate was under 2%.

(87) Skin diseases are common. 6.3% had scabies, while 8% had fungus diseases of the skin, most of these being the disease known locally as panau. This disease causes practically no irritation and the Malays do not worry about the slightly discoloured areas of the skin resulting from it. It is apparently not associated with dirtiness, for in schools away from rivers where many of the children appeared to be unwashed, few causes of panau would be seen - e. g. at Gong Dato' where 44% of the pupils were classed as dirty only 4% had panau, while at Banggol where only one child out of 139 was classed as dirty, 11% had panau.

(88) A list of pupils with enlarged spleens and scabies is given to the Teacher in charge of each school, who is supplied with quinine capsules and sulphur ointment for the treatment of these conditions.

(89) He sees that the treatment is given on arrival at school at 8 a. m. and departure at mid-day. This is safer than trusting to the parents to carry out treatment.

(90) Treatment for other ailments such as yaws is carried out by the Travelling Dispensary, on its next visit to the nearest centre.

#### E. FOOD IN RELATION TO DISEASE.

(91) **Beri-Beri** — There is no restriction on the importation of polished rice but the Malay population normally eats locally grown rice which is not polished. This is also insisted on in Government Institutions.



Indians usually eat parboiled rice, but as most work on Estates, they are able to supplement this with a varied diet.

Chinese still eat polished rice if available.

Beri-Beri is therefore only met with to any extent among Chinese contractors and coolies working at a distance from town supplies.

Thus out of 25 cases admitted to Government Hospitals during the year, only 1 was a Malay and 2 were Indians, the remaining 22 being Chinese of the above type.

## SECTION IV.

### PORT HEALTH WORK AND ADMINISTRATION.

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(92) Kelantan has no port designated as such under article 28 of the International Sanitary Convention of 1926, but coasting steamers plying between Singapore and Bangkok call at Tumpat, while one steamer plying between Kelantan and Singapore calls at Semerak and Bachok.

(93) The dresser in charge of the Government Dispensary at Tumpat exercises the powers of Deputy Health Officer and inspects all passengers.

(94) Other vessels, Chinese or native boats, are boarded by the Customs Officials, and, in the event of any passenger wishing to disembark, or sickness among the crew, the Deputy Health Officer is informed.

(95) The total number of passenger steamers calling at Tumpat was 157 with 552 passengers, 37 of whom were Europeans. All were examined but no case of infectious disease was seen.

## SECTION V.

### MATERNITY AND CHILD WELFARE.

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(96) There is no organised Child Welfare Work, as we have not been able to make provision for regular out-door visiting.

(97) When asked for, a Nurse is sent to private houses to conduct labour, or to advise, after labour. Malays have considerable faith in their own method of midwifery and it will be many years before European methods can replace this, even among the more enlightened classes.

(98) The consideration and toleration of the Matron and Nurses, which has entirely gained the confidence of the Malays where illness is concerned is undoubtedly beginning to make an impression even on their attitude towards pregnancy and labour.

This year one Malay lady sought the services of the Hospital Staff and was attended in her house during labour, while in 3 other cases the Hospital Staff were asked to attend during the puerperal period. Two Malay women were admitted to Hospital for labour.

(99) Another significant fact, which suggests that the Malay midwife is beginning to realise that her methods are not perfect, is that these women often apply to the hospital for dressing and for Ergot, with which to treat their cases.

(100) The majority of maternity cases admitted to hospital however are Indians and Chinese. This year, out of the 27 cases admitted to Kota Bharu Hospital 16 were Indians, 8 Chinese, 2 Malays and 1 Japanese, while out of the 12 cases admitted to Kuala Krai Hospital 11 were Indians and 1 Chinese. Only a few cases attend for antenatal advice, though most are admitted some time before term, and this year 15 continued to attend for advice and weighing of the infants after being discharged from Hospital.

(101) Infants and children form a large proportion of the patients brought to the Dispensaries for treatment, and those who need Hospital treatment are admitted.

## SECTION VI.

### HOSPITALS AND DISPENSARIES.

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#### A. GENERAL.

(102) No new buildings were erected during the year.

(103) The following is a list of the Hospitals and Dispensaries maintained by the Government:—

##### Kota Bharu.

A General Hospital (male) 192 beds (with “Second Class” Ward and special ward for sick convicts).

A small European Hospital.

Female Hospital 60 beds (Malay ward, non-Malay ward, and “Second Class Ward”).

Mental Diseases Hospital (Two male wards, one female ward and 6 cells).

Isolation Hospital (Two wards).

##### Kuala Krai.

A District Hospital (56 beds).

##### Tumpat.

An Out-door Dispensary with Emergency ward (Two beds) and Quarantine Camp.

##### Pasir Puteh.

An Out-door Dispensary.

##### A Travelling Dispensary.

#### B. CASES TREATED.

(104) 5545 in-patients were treated in these hospitals (compared with 6132 in 1931) and there were 229155 attendances at the dispensaries including Travelling Dispensary compared with 114814 in 1931).

##### Assault Cases.

(105) 928 assault cases were dealt with during the year. In the majority of these only minor injuries had been caused. 690 were inflicted by blunt instruments and 98 by fists etc. 58 were caused by heavy sharp instruments such as parangs and klewangs, 3 by spears while 74 were knife wounds. 5 were caused by biting - a not unusual form of assault by Malay women.



### Injuries by Animals.

(106) There were four cases of mauling by tigers - 3 admitted to Kota Bharu Hospital and 1 to Kuala Krai Hospital, all of whom recovered; 5 cases were gored by bulls or buffaloes and 1 by a wild boar. There were 23 cases of dog bite and 4 of monkey bites - the large "BEROK" used by the Malays for getting the nuts off cocoanut ~~plants.~~ <sup>palms.</sup>

### Dead Bodies.

(107) 57 dead bodies were brought in for examination. In 22 of these death was due to drowning, 7 accidents of various sorts, 23 assaults - (12 with blunt weapons, 7 with heavy sharp weapons, 2 gun shot wounds and 2 by strangulation) 3 suicide while in 2 cases death was due to natural causes.

### Attitude of Malays to European Medicine.

(108) It will be seen from the following sections on the work done in the various hospitals that there is very little prejudice among the Malay population, against Western Medicine. 62.18% of In-patients admitted to Kota Bharu Hospital were Malays, and apart from Travelling Dispensary (attendances at which are practically all by Malays, and which have been again doubled this year), the Out-patient attendances at all Dispensaries <sup>ve</sup> ~~has~~ been trebled during the last 10 years.

Apart from the Hospital at Kuala Krai where the population is chiefly Chinese, most of these out-patients are Malays, and the percentage of Malays attending Kota Bharu Out-patient Department has increased from 25% to over 80% during this period of 10 years.

(109) Many Malay cases come in for surgical treatment, and although they are averse to amputations they will sometimes submit to this if the necessity of such an operation is clearly pointed out to them. Thus a Malay boy who was unable to walk owing to deformities and contractures of his limbs resulting from yaws, submitted to amputation of both legs below the knee to enable him to walk on his stumps, ~~While~~ <sup>ve</sup> a few cases had part or whole of their hands amputated following severe injuries.

(110) It has already been mentioned that no legislation is required in connection with vaccination. It is common to get letters from Penggawas (District Head-men) asking that a vaccinator be sent to a district that has not been visited by a Travelling Vaccinator for some time.

### Aboriginal Tribes.

(111) The aboriginal tribes - Sakai and Semang - inhabit only the most inaccessible parts of Kelantan and rarely visit the opened up part of the State, or communicate with other races. Little is therefore known of their more prevalent diseases.

Several were seen by the Chief Medical Officer while inspecting the Ulu Nenggiri in August; and 2 Sakai men were brought <sup>to</sup> ~~at~~ hospital for treatment. It was gathered that malaria, skin diseases and yaws were common among their tribes and these men took back large quantities of the ointment and quinine to treat other cases.

In November one of these patients returned to Kota Bharu Hospital bringing with him 5 others, who were detained for treatment until all were cured. These men had come the whole way (about 150 miles) by bamboo raft.

Of the 8 Sakai admitted, all harboured hook - worms and 6 round - worms in addition. The blood of all was examined but only one showed sub-tertian parasites. One had active yaws, while only one had skin disease (Tinea Imbricata) - (which does not appear to be as common among them as generally supposed).

### C. DETAILS OF WORK DONE IN GOVERNMENT HOSPITALS AND DISPENSARIES.

(This year as in previous years, total attendances for out-patients are given, as it is difficult to get accurate figures for "new cases".

This year all out-patients<sup>who</sup> attended Kota Bharu Hospital were issued with cards giving their register number and requested to bring <sup>these</sup> ~~this~~ when attending again. This has resulted in more accurate figures and will be extended to other Dispensaries next year).

(a) European Hospital.

(112) This year there has been a further reduction in the work done in this hospital, accounted for by the reduction in the European community.

Only 20 patients were admitted compared with 26 in 1931 and 61 in 1930.

(113) Of these, 10 were planters, 6 Government Servants (including wives and children of these groups).

Of the 20 cases treated 13 were males and 7 females.

Only 3 were admitted for malaria (all cases of sub-tertian from Estates).

There was one maternity case.

No death occurred.

(b) Kota Bharu Hospital (Male).

(114) 2694 new cases were admitted during the year, which with 152 remaining on January 1st gives a total of 2846 treated (compared with 3203 in 1931).

(115) 62.11% of the patients were Malays (compared with 51.83% in 1931 and 49.94% in 1930).

(116) The average number of patients in Hospital was 172.73 while the largest number on any one day was 219. The official number of beds is 192.

(117) 238 cases were treated in the Second Class ward (compared with 308 in 1931), of these 145 were Government Servants and 74 F. M. S. Railway employees.

Deaths.

(118) There were 72 deaths giving a death rate of 2.52%. Excluding 12 deaths which occurred within 48 hours of admission the death rate was 2.11%. 29 of these deaths were due to Pulmonary Tuberculosis.

The most prevalent diseases were:—

Malarias. 162 cases with 11 deaths.

Ankylostomiasis. 388 with 5 deaths.

Venereal Diseases. 356 cases with no death.

Chronic Ulcers. 574 cases with no death.

Pulmonary Tuberculosis. 110 cases with 29 deaths.

Other Lung Diseases. 121 cases with 14 deaths.

Beri-Beri. 8 cases with 1 death.

Dysenteries. 49 cases with 1 death.

Operations.

(119) 41 major operations were performed under chloroform, and 121 minor operations under local anaesthetic.



**Out-Patients.**

(120) The number of attendances at the Dispensary was 61,082 (compared with 58,814 in 1931). Of these 81.55% were Malays.

**(c) Female Hospital, Kota Bharu.**

(121) 576 patients were admitted, which with 42 remaining on January 1st gives a total of 618 treated (compared with 621 in 1931). 75% of these were Malays.

(122) There were 9 deaths giving a death rate of 1.45%. Excluding 2 deaths which occurred within 48 hours of admission, the death rate was 1.13%.

(123) 24 of the above cases were admitted to the Second Class Ward, of whom 10 were dependants of F. M. S. Railway Officers and 9 of Government Officers.

(124) There were 27 maternity cases, 17 of whom were Indians, 7 Chinese, 2 Malays and 1 Japanese.

**(d) Kuala Krai Hospital.****In-Patients.**

(125) 1882 patients were admitted during the year, which, with 107 remaining on January 1st gives a total of 1989 treated (compared with 2137 in 1931). Only 16% of these were Malays, the majority being Chinese (41%) and Indians (39%). 19 patients were sent in from Rubber Estates and 386 by F. M. S. Railway. 497 patients were residents of Kuala Krai Town (49% of whom were Chinese).

(126) The average daily number of patients was 85 and the highest number on any one day 124. The official number of beds is 56.

(127) There were 63 deaths giving a death rate of 3.77% (against 3.43% in 1931). Excluding 12 deaths which occurred within 48 hours of admission, the death rate was 2.56%.

(128) 349 minor operations were performed.

(129) There were 152 female patients including 12 maternity cases.

(130) The majority of the female patients were Indians (73); but it is gratifying to see that this ward is becoming more popular with Malays (46 admissions).

(131) The most prevalent diseases:—

Malarias. 579 cases with 16 deaths.

Ankylostomiasis. 91 cases with 5 deaths.

Venereal Diseases. 75 cases with no death.

Chronic Ulcers. 355 cases with 1 death.

Lung Diseases. 179 cases with 27 deaths.

Beri-Beri. 12 cases with 2 deaths.

Dysenteries. 63 cases with 2 deaths.

**Out-Patients.**

(132) The total number of attendances at the Dispensary was 18,653 (compared with 17,592 in 1931).

(133) A Dresser from this hospital visits Kampong Pek and Temangan once a

week for out-door treatment. There were 2,931 attendances at these centres the commonest ailments being Yaws (746) Ulcers (543) Malaria (clinical) (307) Intestinal-Worms (564) and Bronchitis (176).

These patients come from the rural areas near these villages <sup>and</sup> practically all (2,844) were Malays.

(e) Pasir Puteh Dispensary.

(134) There were 18,539 attendances (compared with 17,751 in 1931). 16,912 of these were by Malays and 34 by Europeans.

The commonest ailments were Yaws (3054 attendances), Malaria (3374) Intestinal Parasites (1486), Ulcers (11905). Only 20 cases of dysentery and 36 cases of Venereal Diseases were seen.

(135) 102 assault cases were attended to. Of these 14 were serious and sent to Kota Bharu Hospital.

(136) The Dresser-in-Charge, in addition to his Dispensary work, visited Cherang Ruku once a week (except during the wet monsoon months) either accompanying the Travelling Dispensary, or when this was unable to go there, using a hired car.

(f) Tumpat Dispensary.

(137) There were 21601 attendances at the dispensary (compared with 16584 in 1931, 12089 in 1930 and 10796 in 1929).

Of these 13454 or 62.28% were by Malays and 143 by Europeans.

(138) The commonest diseases were:—

Yaws 1690 attendances.

Malaria 418 attendances.

Venereal Diseases 626 attendances.

(139) There were 184 assault cases, 128 of whom were Malays. In most of these only minor injuries were caused.

(140) The Dresser-in-Charge is also Deputy Health Officer and inspects passengers from all ships.

He is also in charge of the Isolation and Leper Camps.

(g) Travelling Dispensary.

(141) Four new stations were added to the itinerary this year, to extend the service to the villages along the Pasir Mas road making a total of 28 treatment centres. This necessitated sending the dispensary out on Thursdays, and as these proved to be among the most popular centres - an average of over 550 attendances each run - the work was rarely finished till late in the evening.

(142) Owing to the steady increase in the work, it became necessary to send two dressers regularly with the dispensary, and occasionally, a third was sent by car to assist to enable the work to be finished by dusk.

As many as 1000 cases have been dealt with in a day, a large percentage being cases of yaws requiring intravenous injections.

No Hospital Assistant or even Senior Dresser is available for this work, which has all been done by local Malay Dressers.



Diagnosis is of course rough and ready, but fortunately is usually simple, the common complaints being readily identified.

Cases requiring hospital treatment are brought to hospital in the motor dispensary, the interior of which is fitted as an ambulance.

(143) The Chief Medical Officer visits stations at frequent intervals - 40 visits during the year, but more with the view of discussing the arrangements with the Penggawas etc., than of assisting in the actual treatment of cases.

(144) A notice board at each station gives the time of arrival at the dispensary, so that waiting on the part of the patients is minimised. This also states that all treatment is free and that no money should be paid under any circumstances. The Penggawas attends at each centre and has instruction to see that this is observed.

(145) Patients will walk for several miles to the nearest stopping place, but in several centres, where a river had to be crossed - e. g. Kuala Semerak, Tawan, Pantai Sabok and Pengkalan Chepa - it was found that the ferry charges prevented many attendances. At such places, the Dressers now take medicine chests across for treatment of cases who wait on the other bank.

(146) The total number of attendances was 103994 (compared with 56000 in 1931 and 17543 in 1930).

The greatest majority were of course Malays (101498) but there were 1284 attendances by Chinese, most of these being people who have long been settled as padi planters among the Malays in the Pasir Mas area.

(147) 14666 were treated for Yaws, 8271 of whom were given injections of Neosalvarsan, the remainder being young infants who were treated with stovarsal.

The other commoner diseases were "malaria" 10366, skin diseases 8726, eye diseases 3092, worm treatment 14806 (round - worm 12643 and hook - worm 2103).

8274 attended for vaccination.

(148) The service was withdrawn during the Mohammedan Fasting Month (4 tours) as so few patients attended during this period and had to be suspended until 13th February and after 1st November during the North - East Monsoons owing to heavy rains.

(149) Detailed statistics are given in Appendix VI.

## SECTION VII.

### PRISONS AND ASYLUMS.

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#### A. HEALTH OF PRISONERS.

(150) There are special convict wards in Kota Bharu and Kuala Krai Hospitals to which all sick prisoners are sent for treatment.

(151) No epidemic diseases occurred in any of the above, but cases of serious illness were more numerous in the Kota Bharu Prison than in the last few years.

(152) In Kota Bharu the total number of prisoners under detention was 832 (compared with 720 in 1931).

There were 324 admissions to hospital (compared with 290 in 1931) mostly

for minor complaints, but in addition to one Judicial Hanging there were 5 deaths Pneumonia 2, Cerebral Malaria 1, Pulmonary Tuberculosis 1 and debility with advanced Ankylostomiasis 1).

(153) In Kuala Krai out of 218 prisoners 51 were admitted to hospital. There were no deaths.

Two cases of self inflicted cut throat were treated in this hospital; both Tamils who had attempted suicide following murders. In both cases the injuries were practically identical, the windpipe being wounded, but not the great blood vessels.

Both cases recovered.

#### B. MENTAL DISEASES HOSPITAL.

(154) Mentally deranged patients are still one of the most difficult problems in Kelantan.

(155) Over 60 cases are now seen annually, practically all sent for observation by Magistrates, before whom they have been brought for committing assaults or other crimes, or by the Police owing to their strange behaviours in towns.

(156) There are undoubtedly many more cases at large, for Malay "mental defectives" in rural areas are normally looked after by their relatives unless they become definitely unmanageable.

(157) Fortunately the attitude of the Malay to hospital treatment <sup>or</sup> ~~on~~ restraint of mental cases is becoming more rational.

This attitude though very gratifying is putting a greater strain each year on our somewhat limited accommodation. For the last 9 years the figures are as follows:—

<u>Year.</u>	<u>No: of admissions.</u>	<u>Average No: Detained.</u>
1924	18	12
1925	33	13
1926	45	14
1927	44	16
1928	53	18
1929	39	20
1930	44	28
1931	65	36
1932	69	46

(158) Malays are always anxious to take their afflicted relatives home at the earliest opportunity (and this is allowed as soon as the patient is considered harmless and suitable for <sup>supervision</sup> under Malay village conditions) but in most cases will bring them back to hospital voluntarily if they relapse, or they become unmanageable without mechanical restraint.

(159) As would be expected however in a State where communications are difficult there is still considerable room for improvement, and education in this respect is being spread through the Penggawas.

(160) We have, at present, 4 criminal lunatics under detention, all of whom have committed homicide. In view of lack of assurance that such cases will be sent back to hospital at the earliest sign of strangeness in behaviour, it is unsafe to discharge them in care of relatives even when apparently cured.

This year, in accordance with the views expressed by His Excellency the High Commissioner arrangements were made to transfer such cases to the prison without hard labour. One case has been so transferred. As it has since been decided that even this is not satisfactory, arrangements are now under discussion whereby



these cases may be sent to a special Institution for such people when such is available in <sup>the</sup> Straits Settlements.

(161) Our accommodation consists of 2 male and 1 female wards and 6 masonry cells. The average daily number of cases was 46 with a maximum of 49. Unfortunately expansion of this accommodation is not possible at present.

(162) It is generally recognised that the ideal procedure would be to transfer all our lunatics to a Mental Hospital in the Straits Settlements or Federated Malay States using our wards as observation wards only, or, at most, only detaining such cases as are likely to get well quickly.

Apart from the fact that there is always considerable opposition on the part of relatives, to such transfer, the cost of transfer and maintainance is too high to allow this ideal to be carried out. It is however followed as far as is possible, and it will be seen that 13 male and 6 female cases were transferred to Mental Hospitals during the year, and that we now maintain 36 cases in <sup>the</sup> Straits Settlements and Federated Malay States.

(163) Statistics of Mental Cases treated in 1932.

(a) 43 cases remained on January 1st.

69 were admitted during the year giving a total of 112 cases dealt with (95 male and 17 female).

Of these one male was transferred to Tanjong Rambutan Central Mental Hospital, 12 male and 6 female were transferred to Singapore Mental Hospital, 57 were discharged and 2 died. 34 remained at the end of the year (31 male and 3 female).

(b) Maintained at Central Mental Hospital, Tanjong Rambutan.

10 remained on January 1st, 1932.

2 died during the year.

1 transferred during the year.

9 remained at the end of the year (7 male and 2 female).

(c) Maintained at Mental Hospital, Singapore.

9 remained on January 1st 1932.

18 transferred during the year.

27 remained at the end of the year ( 19 male and 8 female).

C. ISOLATION CAMP.

(164) 12 cases <sup>of</sup> Chicken-pox and 2 <sup>of</sup> measles were isolated in these wards during the year.

D. LEPER ASYLUM.

(165) The statistics for these are as follows:—

(a) Leper Wards, Tumpat.

1 remained on January 1st, 1932.

11 admitted during the year making a total of 12 treated.

7 absconded.

1 discharged.

4 remained at the end of the year.

(b) Maintained at Pulau Jerejak.

- 17 remained on January 1st, 1932.  
 1 died during the year.  
 16 remained at the end of the year.

(c) Maintained at Sungei Buloh.

- 4 cases remained during the year.

(d) Malays who are isolated privately.

Previously certified	7
New Cases seen during the year	<u>14</u>
Total	<u>21</u>

METEOROLOGY.

(166) The following are the observations made at Kota Bharu (supplied by Meteorological Officer, Kuala Lumpur):—

Temperature:—

The mean maximum was 91.7F.

The mean minimum was 70.3F.

The highest temperature recorded was 95F on 5th May, and the lowest 64F on 7th March, 1932.

The total rainfall was 84.68 inches; the greatest fall in 24 hours being 5.06 inches on November 20th.

(167) This rainfall of 84.68 inches is the lowest since records have been made (1905), the average over this period being 121 inches, and the highest 194 inches (1922).

VETERINARY.

(168) It will be seen that there were only 6 cases of anthrax in cattle and buffaloes compared with 67 in 1931 and 104 in 1930, and 2 cases of rabies in dogs compared with 1 in 1931 and 5 in 1930.

Prophylactic inoculations of dogs against rabies was employed, the vaccine or emulsion being supplied by the Institute for Medical Research, Kuala Lumpur.

A report by the Veterinary Inspector is given in Appendix X.

APPENDIX I.STATE HOSPITAL.

Chief Medical Officer			
Medical and Health Officer	...	...	one
Hospital Assistants	...	...	two
Dresser Grade I.	...	...	one
Dressers Grade II.	...	...	one
Dressers Grade III.	...	...	seven
Probationer Dressers	...	...	four
Dispenser Grade II.	...	...	one
Laboratory Dresser Grade II.	...	...	one
Veterinary Inspector	...	...	one
Clerical Staff	...	...	four
Asst: Store-Keeper	...	...	one

Travelling Dispenser	...	...	one
Vaccinator	...	...	one
Peons	...	...	three
Attendants	...	...	seventeen
Cooks	...	...	three
Gardeners	...	...	four
Bullock Cart Driver	...	...	one
Toties	...	...	three
Tukang Ayers	...	...	five
Watchmen	...	...	two

#### EUROPEAN HOSPITAL and ASIATIC FEMALE WARDS.

Matron (Assists in supervision of Female Hospital)			
Staff Nurses	...	...	two
Cook (European Hospital)	...	...	one
Boys	...	...	two
Servants to Matron	...	...	two
Attendants (Female)	...	...	five
Cook (Female Hospital)	...	...	one
Tukang Ayer	...	...	one
Gardener	...	...	one
Toty	...	...	one
Watchman	...	...	one

#### KUALA KRAI HOSPITAL.

Medical Officer	...	...	one
Hospital Assistant	...	...	one
Dressers Grade III.	...	...	two
Attendants	...	...	six
Attendant (Female)	...	...	one
Cooks	...	...	two
Toties	...	...	two
Gardener	...	...	one
Watchman	...	...	one

#### TUMPAT DISPENSARY.

Deputy Health Officer	...	...	one
Attendant	...	...	one
Watchman	...	...	one

#### PASIR PUTEH DISPENSARY.

Dresser-in-Charge	...	...	one
Attendant	...	...	one

#### TRAVELLING MOTOR DISPENSARY.

Driver	...	...	one
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#### ANTI-MALARIAL WORKS, KOTA BHARU.

Sanitary Inspector	...	...	one
Mandore	...	...	one
Coolies	...	...	eight

#### ANTI-MALARIAL WORKS, KUALA KRAI.

Sanitary Inspector	...	...	one
Mandore	...	...	one
Coolies	...	...	seven



APPENDIX II.  
REVENUE, 1932.

KOTA BHARU.

Hospital Fees	...	...	...	\$5120.26
Sale of Medicines	...	...	...	\$716.31
Licence Fees	...	...	...	\$320.00
Misc: Receipts (Births & Deaths)			...	\$59.00
Misc: Receipts	...	...	...	<u>\$205.91</u>
				\$6421.48

TUMPAT.

Hospital Fees	...	...	...	Nil
Sale of Medicines	...	...	...	\$855.01
O. D. D. R.	...	...	...	<u>\$59.30</u>
				\$914.31

KUALA KRAI.

Hospital Fees	...	...	...	\$2051.50
Sale of Medicines	...	...	...	<u>\$522.15</u>
				\$2573.65

PASIR PUTEH.

Sale of Medicines	...	...	...	<u>\$24.40</u>
				<u>\$24.40</u>
			Total	<u>\$9933.84</u>

EXPENDITURE, 1932.

A, Personal Emoluments	...	...	...	...	\$61,222.49
Allowance Travelling and Personal	...	...	...	...	\$3,102.74
Allowance Motor Car	...	...	...	...	\$1,440.00
Allowance Motor Cycle	...	...	...	...	\$1,440.00
Allowance Bicycle	...	...	...	...	\$96.00
Allowance Rations to Nurses	...	...	...	...	\$1,335.00
Allowance for Sisters (Washing)	...	...	...	...	\$480.00
Allowance to Sisters (Transport)	...	...	...	...	\$1,000.00
Allowance to Dr. W. J. Geale	...	...	...	...	\$2,400.00
Anti-Malarial Works	...	...	...	...	\$3,281.42
Contingent Expenses	...	...	...	...	\$549.60
Diets and Extras	...	...	...	...	\$19,958.71
Equipments	...	...	...	...	\$4,360.60
Laundry	...	...	...	...	\$1,710.79
Lighting	...	...	...	...	\$2,846.54
Medicines and Instruments	...	...	...	...	\$32,211.94
Maintainance of Lunatics and Lepers	...	...	...	...	\$11,587.92
Maintainance of Travelling Dispensary	...	...	...	...	\$531.71
Uniforms	...	...	...	...	\$1,022.30
Wages Hospital Servants	...	...	...	...	\$18,275.27
Temporary Allowance	...	...	...	...	\$1,394.85
Transport of Lunatics	...	...	...	...	\$469.51
			Total		<u>\$170,717.39</u>



## APPENDIX III.

**GOVERNMENT OF KELANTAN.**

RETURN of SICK (In-door) of the Government Hospital in Kelantan  
for the year Ending 31st December, 1932.

Class.	Specific Diseases.	Remained.	Admitted.	Total.	Discharged.	Transferred.	Absconded.	Died.	Remaining.	Remarks.
Infective Diseases.	Cerebrospinal fever .. .. .									
	Chicken-pox .. .. .		12	12	12					
	Cholera .. .. .									
	Dengue .. .. .									
	Dysentery A .. .. .	6	104	110	107			2	1	
	Dysentery B .. .. .		8	8	7			1		
	Enteric Fever .. .. .	2	5	7	5			2		
	Erysipelas .. .. .		3	3	3					
	Gonorrhœa .. .. .	2	192	194	181				13	
	Gonorrhœal rheumatism .. .. .	4	47	51	46				5	
	Gonorrhœal conjunctivitis. . . . .	1	6	7	7					
	Hydrophobia .. .. .									
	Coryza .. .. .		14	14	14					
	Leprosy .. .. .	1	15	16	4		7		5	
	Madura disease .. .. .									
	Malaria--									
	(a) Benign tertian .. .. .	4	52	56	55				1	
	(b) Quartan .. .. .		21	21	20			1		
	(c) Malignant tertian .. .. .	10	253	263	252			9	2	
	(d) Mixed infection .. .. .		7	7	7					
	(e) Type undiagnosed .. .. .	9	386	395	383			6	6	
	(f) Malarial cachexia .. .. .	10	101	111	97			11	3	
	(g) Blackwater fever .. .. .		1	1	1					
	Measles .. .. .		3	3	3					
	Mumps .. .. .		1	1	1					
	Phagedoena .. .. .									
	Plague .. .. .									
	Pneumonia .. .. .	8	158	166	120			35	11	
	Pyæmia .. .. .									
	Pyrexia of uncertain origin .. .. .									
	Rheumatism .. .. .	1	13	14	14					
	Septicæmia .. .. .		1	1				1		
	Small-pox .. .. .									
	Syphilis -- .. .. .									
	(a) Primary .. .. .	2	34	36	33				3	
	Carried forward .. .. .	60	1437	1497	1372		7	68	50	

ss.	Specific Diseases.					Remained	Admitted.	Total.	Discharged.	Transferred.	Absconded.	Died.	Remaining.	Remarks.
Intoxications.  the two preceding Groups.  ditions incident to Various Parts.  Nerves.  Spinal Cord and Mem- branes.  Brain and Mem- branes.	<i>Brought forward</i> ..					60	1437	1497	1372		7	68	50	
	(b) <i>Secondary</i> .. .. .					1	12	13	13					
	(c) <i>Tertiary</i> .. .. .					10	35	45	41				4	
	Tetanus .. .. .													
	Tuberculosis- .. .. .													
	(a) <i>General</i> .. .. .					1	2	3	2				1	
	(b) <i>Phthisis</i> .. .. .					9	101	110	76			29	5	
	Whooping Cough .. .. .													
	Yaws .. .. .					35	411	446	420				26	
	Other Infective Disease .. .. .													
	Alcoholism .. .. .													
	Mercury, chronic poisoning by .. .. .													
	Morphinism .. .. .													
	Other Intoxications .. .. .													
	Anæmia .. .. .					3	29	32	29			3		
	Beri-beri .. .. .					5	20	25	21			3	1	
	Diabetes .. .. .						3	3	2				1	
	Gout .. .. .						1	1	1					
	Leucocythæmia .. .. .													
	Lymphadenoma .. .. .													
	Osteo-arthritis .. .. .													
	Other General Diseases .. .. .													
	Malformations .. .. .													
	New Growth, Non-malignant .. .. .						6	6	6					
	Do. Malignant .. .. .						2	2				1	1	
	Cyst .. .. .					2	26	28	28					
	Other Morbid Conditions .. .. .					1	1	2	2					
	Neuritis .. .. .						1	1	1					
	Multiple Neuritis .. .. .													
	Other Diseases of the Nerves .. .. .													
	Meningitis .. .. .													
	Myelitis .. .. .					1	1					1		
	Primary lateral sclerosis .. .. .													
	Locomotor ataxia .. .. .													
	Insular sclerosis .. .. .													
	Other Diseases of Spinal Code and Membranes .. .. .													
	Meningitis .. .. .													
	Hæmorrhage .. .. .													
	Abscess .. .. .													
	Hydrocephalus .. .. .													
	Other Diseases of Brain and Membranes .. .. .													
	<i>Carried forward</i> ..					127	2088	2215	2014		7	105	89	



Class.	Specific Diseases.						Remained.	Admitted.	Total.	Discharged.	Transferred.	Absconded.	Died.	Remaining.	Remarks.
Diseases of the Nervous System - (cont.)	<i>Brought forward</i>						127	2088	2215	2014		7	105	89	
	Nervous Disorders.	Apoplexy	..	..	..	..									
		Paraplegia	..	..	..	..	2		2	1				1	
		Hemiplegia	..	..	..	..	4	4	8	6			1	1	
		Monoplegia,	..	..	..	..									
		Chorea	..	..	..	..									
		Convulsions	..	..	..	..		1	1	1					
		Epilepsy	..	..	..	..		2	2	2					
		Neuralgia	..	..	..	..	1	9	10	10					
		Hysteria	..	..	..	..									
		Neurasthenia	..	..	..	..		2	2	2					
		Other Nervous Disorders	..	..	..	..									
	Mental Diseases.	Idiocy	..	..	..	..									
		Mania	..	..	..	..		2	2	2					
		Melancholia	..	..	..	..		9	9	8			1		
		Delusional insanity	..	..	..	..									
		General paralysis of the insane	..	..	..	..									
		Dementia	..	..	..	..									
		Other Mental Diseases	..	..	..	..		1	1	1					
	Diseases of the Eye.	Conjunctivitis	..	..	..	..	2	19	21	21					
		Trachoma	..	..	..	..		1	1	1					
		Keratitis	..	..	..	..									
		Ulcer of cornea	..	..	..	..	1	12	13	12				1	
		Opacity of cornea	..	..	..	..		2	2	2					
		Staphyloma	..	..	..	..		2	2	2					
		Iritis	..	..	..	..									
		Glaucoma	..	..	..	..									
		Hypopyon	..	..	..	..									
		Optic neuritis	..	..	..	..									
		Optic atrophy	..	..	..	..									
		Cataract	..	..	..	..		6	6	6					
		Panophthalmitis	..	..	..	..									
		Amblyopia and Amaurosis	..	..	..	..									
		Errors in Refraction	..	..	..	..									
		Blepharitis	..	..	..	..									
		Entropion	..	..	..	..									
		Other Eye Diseases	..	..	..	..		7	7	6				1	
	Diseases of the Ear.	Inflammation	..	..	..	..		5	5	5					
		Other Ear Diseases	..	..	..	..		9	9	9					
	Diseases of the Nose.	Inflammation	..	..	..	..									
		Other Nose Diseases	..	..	..	..		1	1	1					
	<i>Carried forward</i>						137	2182	2319	2112		7	107	93	

Class.	Specific Diseases.	Remained.	Admitted.	Total.	Discharged.	Transferred.	Absconded.	Died.	Remaining.	Remarks.
Diseases of the Circulatory System.	<i>Brought forward</i>	137	2182	2319	2112		7	107	93	
	Pericarditis .. .. .		2	2	1			1		
	Endocarditis .. .. .									
	Valvular Disease .. .. .									
	Myocarditis .. .. .									
	Dilatation of Heart .. .. .									
	Syncope .. .. .									
	Disordered action of Heart .. .. .		1	1	1					
	Aneurysm .. .. .		2	2	1				1	
	Phlebitis .. .. .									
	Thrombosis .. .. .									
	Varix .. .. .									
	Other Diseases of the System .. .. .									
Diseases of the Respiratory System.	Asthma .. .. .	4	37	41	39				2	
	Laryngitis .. .. .		2	2	2					
	Bronchitis .. .. .	9	106	115	111			1	3	
	Broncho-pneumonia .. .. .		7	7	5			2		
	Gangrene of lung .. .. .		1	1				1		
	Pleurisy .. .. .		2	2	1			1		
	Empyema .. .. .									
	Other Diseases of the System .. .. .		5	5	4			1		
	Stomatitis .. .. .		3	3	3					
	Ulceration of mouth .. .. .		1	1	1					
	Gangrene of mouth .. .. .		1	1				1		
	Pyorrhœa alveolaris .. .. .		7	7	7					
	Caries of tooth .. .. .		6	6	6					
Diseases of the Digestive System.	Ulceration of tongue .. .. .									
	Sore throat .. .. .		1	1	1					
	Tonsillitis .. .. .		9	9	8			1		
	Inflammation of pharynx .. .. .		5	5	5					
	Gastritis .. .. .	1	4	5	5					
	Ulceration of stomach .. .. .		1	1				1		
	Dyspepsia .. .. .		36	36	36					
	Enteritis .. .. .		6	6	6					
	Appendicitis .. .. .									
	Colitis .. .. .		11	11	11					
	Ulceration of intestines .. .. .									
	Sprue .. .. .									
	Hernia .. .. .		5	5	5					
	Intestinal obstruction .. .. .		1	1	1					
	Diarrhœa .. .. .		26	26	25				1	
	<i>Carried forward</i> ..	151	2470	2621	2397		7	117	100	



Class.	Specific Diseases.					Remained.	Admitted.	Total.	Discharged.	Transferred.	Absconded.	Died.	Remaining.	Remarks
Diseases of the Digestive System--(cont.)	<i>Brought forward</i> ..					151	2470	2621	2397		7	117	100	
	Constipation .. .. .						14	14	14					
	Colic .. .. .						11	11	10				1	
	Ischio-rectal Abscess .. .. .													
	Ulcer of anus .. .. .													
	Fissure of anus .. .. .													
	Fistula in ano .. .. .						3	3	2				1	
	Hemorrhoids .. .. .					1	7	8	7				1	
	Hepatitis .. .. .						8	8	7			1		
	Abscess of liver .. .. .						3	3				3		
	Cirrhosis of liver .. .. .					1		1	1					
	Congestion of liver .. .. .													
	Jaundice .. .. .					1	7	8	7			1		
	Gall stones .. .. .													
Diseases of the Lymphatic System.	Peritonitis .. .. .						4	4				4		
	Ascites of unknown origin .. .. .					1	1	2	1				1	
	Other Diseases of the System .. .. .													
	Spleen, Inflammation .. .. .													
	Spleen Rupture .. .. .													
Diseases of the Urinary System.	Bubo .. .. .					4	88	92	79				13	
	Suppuration of Glands .. .. .													
	Lymphangitis .. .. .						4	4	4					
	Other Diseases of the System .. .. .													
	DISEASES OF THE THYMUS .. .. .													
	DISEASES OF THE THYROID BODY .. .. .													
	DISEASES OF THE ADRENALS (Supra-renals)													
	Acute Nephritis .. .. .						2	2	2					
	Bright's disease .. .. .													
	Cystitis .. .. .						5	5	5					
	Calculus .. .. .						2	2	2					
	Retention of urine .. .. .						2	2	1				1	
	Incontinence of urine .. .. .						1	1	1					
	Other Diseases of the System .. .. .													
Diseases of the Generative System <i>Male.</i>	Stricture .. .. .						11	11	10				1	
	Urethral fistula .. .. .						4	4	3				1	
	Extravasation of urine .. .. .													
	Phimosis .. .. .					2	14	16	16					
	Ulcer Penis .. .. .													
	Soft chancre .. .. .						10	10	10					
	Scrotum, Abscess .. .. .													
	Do. Sloughing .. .. .													
<i>Carried forward</i> ..					161	2671	2832	2579			7	126	120	

ass.	Specific Diseases.						Remained.	Admitted.	Total.	Discharged.	Transferred.	Absconded.	Died.	Remaining.	Remarks.
Male—(cont.)	Brought forward ..						161	2671	2832	2579		7	126	120	
	Hydrocele .. .. .						1	5	6	5				1	
	Orchitis .. .. .							13	13	11				2	
	Epididymitis .. .. .							9	9	9					
Female.	Other Diseases Male Organs .. ..							2	2	2					
	Metritis .. .. .							2	2	2					
	Erosion of cervix .. .. .														
	Displacements and distortions .. ..														
	Vulva, Inflammation .. .. .							1	1	1					
	Do. Abscess .. .. .														
	Do. Ulcer .. .. .														
	Do. Soft Chanere .. .. .														
	Other Diseases Female Organs .. ..						1	1	2	2					
	Natural Labour .. .. .						1	28	29	29					
	Difficult Labour .. .. .						1	1	2	2					
	Abortion .. .. .							7	7	7					
Parturition.	Rupture perineum .. .. .														
	Retention of placenta .. .. .														
	Still-birth .. .. .														
	Premature birth .. .. .														
	Post-partum hæmorrhage .. .. .														
	Puerperal sapræmia .. .. .						1	2	3	2			1		
	Other Affections .. .. .							2	2	2					
	DISEASES OF THE FEMALE BREAST ..														
	DISEASES OF THE MALE BREAST ..														
	Periostitis .. .. .							3	3	3					
Diseases of the Organs of Locomotion.	Caries of bones .. .. .														
	Necrosis of bones .. .. .														
	Arthritis .. .. .						1	50	51	45				6	
	Synovitis .. .. .							12	12	12					
	Ankylosis .. .. .														
	Caries of spine .. .. .														
	Spinal Injury .. .. .						1	1	2	1				1	
	Myalgia .. .. .							15	15	15					
	Other Diseases of Organs of Locomotion ..							2	2	2					
Connective Tissue.	Cellulitis .. .. .						1	15	16	14			1	1	
	Abscess .. .. .						2	105	107	99				8	
	Gangren .. .. .														
	Edema .. .. .														
	Other Diseases of the Connective Tissue														
	Carried forward ..						171	2947	3118	2844		7	128	139	



Class.	Specific Diseases.						Remained	Admitted.	Total.	Discharged.	Transferred.	Absconded.	Died.	Remaining.	Remark
Diseases of the Skin.	<i>Brought forward</i>						171	2947	3118	2844		7	128	139	
	Urticaria	..	..	..	..	..		3	3	3					
	Eczema	..	..	..	..	..		26	26	26					
	Boil	..	..	..	..	..		12	12	12					
	Carbuncle	..	..	..	..	..		6	6	6					
	Herpes	..	..	..	..	..		8	8	8					
	Herpes zoster		..	..	..	..									
	Psoriasis	..	..	..	..	..		2	2	2					
	Ulcer	..	..	..	..	..	81	929	1010	963		1	1	45	
	Other Skin Diseases	..	..	..	..	..		1	1	1					
Injuries.	Concussion of brain	..	..	..	..	..		1	1	1					
	Comprussion of brain		..	..	..	..		1	1	1					
	(a) Wounds	..	..	..	..	..	16	397	413	397			2	14	
	(b) Sprains	..	..	..	..	..		22	22	22					
	(c) Fractures, simple	..	..	..	..	..	1	12	13	10			1	2	
	(d) Do. compound		..	..	..	..	3	13	16	15				1	
	(e) Dislocations	..	..	..	..	..		2	2	2					
	(f) Other local injuries	..	..	..	..	..	1	61	62	61				1	
	Burns	..	..	..	..	..		12	12	10			2		
	Dog bite	..	..	..	..	..		6	6	5				1	
	Monkey bite	..	..	..	..	..		3	3	2				1	
	Tiger bite	..	..	..	..	..		1	1	1					
	Datura	..	..	..	..	..		1	1	1					
	Other Poisons	..	..	..	..	..									
Parasites.	Balantidium Coli	..	..	..	..	..									
	Lambliasis	..	..	..	..	..		4	4	4					
	Schistosomum Hoematobium		..	..	..	..									
	Do. Japonicum	..	..	..	..	..									
	Helmintiasis	..	..	..	..	..		7	7	7					
	Tænia solium		..	..	..	..									
	Do. saginata	..	..	..	..	..									
	Do. echinococcus	..	..	..	..	..									
	Other Cestoda	..	..	..	..	..									
	Ascaris Lumbricoides	..	..	..	..	..	2	143	145	143				2	
	Ankylostomiasis	..	..	..	..	..	19	479	498	467			10	21	
	Oxyuris Vermicularis		..	..	..	..									
	Filaria	..	..	..	..	..									
	Other Nematoda	..	..	..	..	..		1	1	1					
	Tinea Tonsurans	..	..	..	..	..		2	2	2					
	Do. Circinata	..	..	..	..	..	1	2	3	3					
	Do. Cruris	..	..	..	..	..									
<i>Carried forward</i>							295	5104	5399	5020		8	144	227	

Class.	Specific Diseases.					Remained.	Admitted.	Total.	Discharged.	Transferred.	Absconded.	Died.	Remaining.	Remarks.
Parasites—(cont.)	<i>Brought forward</i> ..					295	5104	5399	5020		8	144	227	
	Tinea Imbricata .. .. .						12	12	12					
	Other Vegetable Parasites .. .. .													
	Scabies .. .. .					3	47	50	48				2	
	Pediculosis .. .. .													
	Other Animal Parasites .. .. .													
	Under Observation .. .. .					4	80	84	84					
	TOTAL ..					302	5243	5545	5164	--	8	144	229	
Surgical Operations.	Major —													
	Abdominal .. .. .						2							
	Amputation .. .. .						2							
	Fibroma .. .. .						4							
	Hernia .. .. .						1							
	Removal of Tumour .. .. .						2							
	Others .. .. .						30							
	Minor—													
	Abscess .. .. .						329							
	Removal of Cysts .. .. .						32							
	Others .. .. .						257							
	TOTAL ..						659							
	UNDER OBSERVATION .. .. .													
	NO DISCOVERABLE DISEASES .. .. .													
	TOTAL ..													
	NATIONALITIES OF PATIENTS.													
	Europeans .. .. .						20	20	20					
	Eurasians .. .. .						6	6	5				1	
	Chinese .. .. .					127	1338	1465	1316		8	68	73	
	Indians .. .. .					46	1379	1425	1313			45	67	
	Javanese .. .. .					3	50	53	47			3	3	
	Malays .. .. .					121	2393	2514	2408			27	79	
	Japanese .. .. .						4	4	3				1	
	Others .. .. .					5	53	58	52			1	5	
	TOTAL ..					302	5243	5545	5164		8	144	229	

Percentage of deaths to total treated	..	..	..	..	..	..	..	..	2.59
Percentage of deaths to total treated, excluding deaths occurring within 48 hours									2.13
Total number of cases which proved fatal within 48 hours of admission	..	..							26
Average stay in Hospital of Fatal Cases	..	..	..	..	..	..	..	..	27 days
Average daily number of prisoners (for Prisons only)	..	..	..	..	..	..	..	..	224
Average daily number of sick	..	..	..	..	..	..	..	..	266
Largest number of sick on one day (with date)	..	..	..	..	..	..	..	..	304 on 4.3.32.
Total number of beds	..	..	..	..	..	..	..	..	356

RETURN of Out-door Patients Treated for the year ending 31st December, 1932.

Malays.			Chinese.			Indians.			Europeans.			Eurasians.			Others.			Total.					
New Cases.	Repetitions.	Total.	New Cases.	Repetitions.	Total.	New Cases.	Repetitions.	Total.	New Cases.	Repetitions.	Total.	New Cases.	Repetitions.	Total.	New Cases.	Repetitions.	Total.	New Cases.	Repetition.	Total.			
168696	25762	194458	12709	6998	19707	7170	4009	11179	766	287	1053	143	190	333	1640	785	2425	191124	38031	229155			

Medical Officer.



## APPENDIX IV.

## MOST PREVALENT DISEASES IN GOVERNMENT HOSPITALS, 1932.

Disease.	Kota Bharu.			Kuala Krai.		
	Cases.	Deaths.	Death rate.	Cases.	Deaths.	Death rate.
MALARIA :-						
Benign Tertian ... ..	26	-	-	28	-	-
Quartan ... ..	14	-	-	7	1	-
Malignant Tertian ... ..	69	6	4.6%	187	3	2.68%
Mixed Infection ... ..	5	-	-	2	-	-
Type Undiagnosed ... ..	77	-	-	316	6	-
Malaria Cachexia ... ..	48	5	-	56	6	-
DYSENTERY & DIARRHOEA :-						
Amoebic ... ..	49	1	-	57	1	-
Bacillary ... ..	-	-	1.66%	8	1	2.5%
Diarrhoea ... ..	11	-	-	15	-	-
Ankylostomiasis ... ..	388	5	1.28%	94	5	5.31%
VENEREAL DISEASES :-						
Syphilis ... ..	159	-	-	18	-	-
Gonorrhœa and its sequelae ...	204	-	-	93	-	-
Soft Chancre ... ..	6	-	-	4	-	-
Ulcers ... ..	616	-	-	393	-	-
Pneumonia ... ..	43	11	25.58%	124	25	20.16%
Phthisis ... ..	94	28	29.78%	16	1	6.25%
Beri-beri ... ..	12	1	8.33%	13	2	15.38%

# APPENDIX V. STATE HOSPITAL.

STATISTICS SHOWING THE NUMBER OF ADMISSIONS AND DEATH RATES OF THE PRINCIPAL DISEASES  
DURING THE LAST FIVE YEARS 1928 TO 1932.

	Total Admissions					Deaths					Death Rate Per cent				
	1928	1929	1930	1931	1932.	1928	1929	1930	1931	1932.	1928	1929	1930	1931	1932.
Malaria	2659	1427	1453	1065	854	72	55	61	34	27	2.70	3.85	4.19	3.20	3.16
Ankylostomiasis	353	265	427	495	498	25	23	24	18	10	7.08	8.67	5.62	3.63	2.00
Pneumonia Lobar	98	100	120	107	166	34	34	50	27	35	34.69	34.00	41.66	25.14	21.08
Broncho Pneumonia	22	13	5	3	7	4	6	—	—	2	18.18	16.15	—	—	28.57
Bronchitis	209	255	240	204	115	3	—	1	—	1	1.43	—	0.41	—	0.86
Dysentery	151	51	104	110	118	21	4	5	11	3	13.90	7.84	4.80	10.00	2.54
Syphilis	275	176	196	229	94	—	—	1	1	—	—	—	0.51	0.43	—
Yaws	484	653	684	715	446	2	1	—	1	—	0.41	0.15	—	0.13	—
Ulcers	442	395	506	789	1010	1	—	—	3	1	0.22	—	—	0.38	0.09
Beri-Beri	147	48	47	90	25	12	6	6	10	3	8.16	12.50	12.76	11.10	12.00

APPENDIX VI.

CASES TREATED BY TRAVELLING DISPENSARY AT EACH CENTRE.

(ATTENDANCES)

Centres.	Vacc:	Yaws:		Mal:	Anky:	Asearis.	Eye Dis:	Skin Dis:	Other Dis:	Total
		914	Stove:							
Mulong ...	156	172	97	387	62	282	35	120	796	2107
Kadok ...	48	152	82	231	39	170	46	183	770	1721
Ketereh ...	284	744	389	588	150	819	160	481	2348	5963
P. Chondong ...	310	357	267	330	129	704	112	357	1951	4517
Wakaf Labok ...	16	499	277	608	65	443	155	397	1710	4170
Kg: Machang ...	49	712	313	506	93	526	113	312	2137	4761
Ulu Sat ...	—	77	98	210	27	171	20	131	728	1462
Jeram ...	264	200	152	247	32	167	34	185	970	2251
Cherang Ruku ...	313	175	358	236	64	439	127	212	1771	3695
Bukit Yong ...	340	290	169	323	33	327	99	157	1197	2935
Bukit Abal ...	375	303	333	328	68	582	129	236	1807	4211
Selesing ...	256	388	343	269	72	476	109	312	1609	3834
Melor ...	594	210	299	537	93	550	118	406	1811	4623
Pringat ...	391	125	154	422	79	340	71	263	1086	2931
Tawan ...	547	293	237	359	60	319	70	305	1421	3611
Bachok ...	581	473	370	1264	170	969	340	586	4483	9236
Jelawat ...	699	382	226	434	115	554	121	504	2302	5337
Gunong ...	143	257	137	335	33	283	102	246	1324	2860
Pauh Lima ...	263	70	87	188	46	196	60	238	823	1961
R. Rendang ...	248	253	179	176	37	438	111	218	1131	2791
Baong ...	88	118	164	132	51	406	81	179	1143	2362
P. Chepa ...	193	153	264	151	33	284	123	192	1074	2472
Pantai Sabok ...	255	166	331	379	70	654	190	421	2415	4931
Sabok ...	91	117	166	276	42	396	142	240	1192	2662
Kota ...	202	133	63	66	45	221	86	161	714	1691
Salor ...	978	309	284	570	181	778	100	468	1892	5560
Wakaf Che' Merah	268	160	129	258	57	541	72	313	1185	2983
Pasir Mas ...	322	983	377	556	147	618	166	853	2334	6356
Total	8274	8271	6395	10366	2103	12643	3092	8726	44124	103994

NATIONALITY.

Malays	=	101498
Chinese	=	1284
Indians	=	672
Others	=	540
Total		<u>103994</u>

VISITED BY DRESSER FROM KUALA KRAI.

Kg: Pek ...	414	332	307	300	264	17	815	482	2931
Temangan ...	113	27	115	70	39	6	250	97	717
Total	527	359	422	370	303	23	1065	579	3648

NATIONALITY.

Malays	=	3482
Chinese	=	106
Indians	=	44
Others	=	16
Total		<u>3648</u>



APPENDIX VII.MICROSCOPICAL EXAMINATION IN STATE HOSPITAL, KOTA BHARU.

## FAECES:—

Ova Tricho Cephalus Dispar	...	...	...	556
Ova Ascaris Lumbricoides	...	...	...	700
Ova Ankylostoma	...	...	...	1663
Ova Strongyloids	...	...	...	56
Ova Oxyuris Vermicularis	...	...	...	2
Entamoeba Histolytica	...	...	...	97
Lambliia Intestinalis	...	...	...	56
Negative	...	...	...	313
			Total	<u>3443</u>

## BLOOD:—

Benign Tertian	...	...	...	33
Quartan	...	...	...	17
Sub-Tertian	...	...	...	77
Mixed Infection	...	...	...	8
Negative	...	...	...	1392
			Total	<u>1527</u>

## SPUTUM:—

Sputum T. B.	...	...	...	78
Negative	...	...	...	180
			Total	<u>258</u>

## SERUM:—

Bacilli Leproe	...	...	...	8
Negative	...	...	...	13
			Total	<u>21</u>

## KHAN TEST:—

Positive	...	...	...	66
Negative	...	...	...	65
			Total	<u>131</u>

MICROSCOPICAL EXAMINATION IN KUALA KRAI HOSPITAL.

## FAECES:—

Ova Ascaris	...	...	...	136
Ova Ankylostoma	...	...	...	125
Ova Oxyuris Vermicularis	...	...	...	2
Entamoeba Histolytica	...	...	...	64
Ova Tricho Cephalus Dispar	...	...	...	204
Negative	...	...	...	313
			Total	<u>844</u>

## BLOOD:—

Benign Tertian	...	...	...	38
Quartan	...	...	...	10
Sub-Tertian	...	...	...	196
Mixed Infection	...	...	...	4
Negative	...	...	...	551
			Total	<u>799</u>

## SPUTUM:—

Sputum T. B.	...	...	...	22
Negative	...	...	...	86
			Total	<u>108</u>

## SERUM:—

Bacilli Leproe	...	...	...	1
Negative	...	...	...	2
			Total	<u>3</u>

APPENDIX VIII.

ESTATE HEALTH STATISTICS.

Total Estate Population all Nationalities.													Indian Population.						
<u>Estate Hospitals.</u>	Total labour force with dependants.	Total Admissions			Malaria and undiagnosed fever.		Ankylos		Diarrhoea and Dysentery		Lung Diseases		Veneral Diseases	Ulcers	Indians with dependants	Deaths	Death rate per 1000.	Births	Death under one year.
		Cases	Deaths	Death rate per 1000.	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths							
Kenneth     ...     ...	114	45	1	8.77	17	—	1	—	7	—	8	—	3	3	84	1	11.9	1	—
Lower Sokor     ...	187	76	3	16.04	27	1	2	—	9	—	3	1	1	5	127	3	23.62	6	—
Kerilla     ...     ...	335	139	9	26.86	48	3	1	—	14	1	3	3	1	17	270	8	29.62	11	1
Keln: Rubber Ests: Ltd. Chaning & Lepan Kabu & Pasir Jinggi	530	148	13	24.52	6	—	19	—	3	—	29	2	3	44	148	7	47.29	4	3
	298	19	4	13.42	1	—	—	—	1	—	—	—	—	—	181	3	16.57	8	1
	Kuala Nal     ...     ...	249	61	8.03	6	—	—	—	1	—	13	1	9	7	100	2	20.00	4	1
	Pasir Gajah     ...     ...	169	5	5.91	—	—	—	—	—	—	2	—	—	—	119	—	—	—	—
St: Cyr:     ...     ...	53	—	—	—	—	—	—	—	—	—	—	—	—	—	24	—	—	—	—
	1935	493	33	17.05	105	4	23	—	35	1	58	7	17	77	1053	24	22.79	34	6

Deaths include all who died in Government Hospitals within 30 days of admissions.  
Estates employing entirely Malay or Chinese labour are not shown, as no reliable health statistics are available.

APPENDIX IX.

ESTIMATED POPULATION FOR KELANTAN, 1932.

Malays.		Chinese.		Europeans.		Murasians.		Others.		Total all Races.		Births	Deaths.	
Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female			
Kota Bharu	109110	112090	3720	3777	32	28	10	7	4387	3243	119259	119135	8504	4274
Pasir Puteh	36966	38282	779	624	2	-	-	-	581	441	38328	39347	2856	1450
Ulu Kelantan	20165	19588	5928	1563	50	22	11	4	4316	1695	30470	22872	1471	900
Total Kelantan	166241	169960	12427	5964	84	40	21	11	9284	5379	188057	181354	12831	6624

Under Malays are included all persons of the Malayan Race classed in the 1931 Census <sup>d</sup>Malaysians.

The total number births registered in 1932 was 12831 ( 6480 males and 6351 females ). In every 100 births registered 50.50% were males and 49.50% females a ratio 98.01 females to every 100 males born. The highest birth rate according to nationalities was 35.75 per mille amongst Malays and the next, amongst Chinese 28.73. The lowest rate (amongst Europeans) was 8.0 per mille.

The total number of deaths registered was 6624 (3650 males and 2974 females).

Birth rate = 34.74 per mille compared with 26.41 in 1931.

Death rate = 17.93 per mille compared with 16.90 in 1931.

Infantile mortality = 111.77 per 1000 births compared with 135.75 in 1931.



APPENDIX IXa.

Births and Deaths registered since introduction of Notification in June, 1926.

	Kota Bharu Dist:		Pasir Puteh Dist:		Ulu Kelantan Dist:	
	Births	Deaths	Births	Deaths	Births	Deaths
1926	622	496	362	259	168	123
1927	2162	2276	1114	1191	444	725
1928	1595	2204	1469	1417	530	722
1929	2006	1864	1153	1027	492	378
1930	3644	2520	1587	916	1045	839
1931	6449	3603	2068	1277	1060	1261
1932	7898	4272	2856	1450	1471	900

APPENDIX IXb.

Births and Deaths registered in 1932 according to Nationalities.

				Population	Births	Birth rate per mille	Deaths	Death rate per mille
Malays	..	..	..	330885	12029	39.37	6147	18.58
Chinese	..	..	..	17610	528	29.41	280	15.9
Indians	..	..	..	6791	114	16.78	80	11.78
Europeans	..	..	..	124	1	8.0	—	—
Others	..	..	..	7185	159	22.12	115	16.0

APPENDIX IXc.

		Population	Births	Deaths
Kota Bharu Town		15490	606	275

APPENDIX IXd.

Infantile Mortality.

Total Births.	Deaths under one year of age.	Mortality per 1000 Births.
12831	1434	111.76

APPENDIX IX e.

## STATE OF KELANTAN.

Death grouped according to age, Sex and Nationality.

Age Groups.	Sex.	Europeans	Eurasians	Malays	Chinese	Indians	Others	Total
0 — 3	M	-	-	614	21	6	7	648
Month	F	-	-	394	9	2	-	406
4 — 11	M	-	-	190	4	-	2	196
Month	F	-	-	176	12	2	1	191
1 — 4	M	-	-	351	10	3	3	367
Years	F	-	-	293	5	4	2	304
5 — 9	M	-	-	302	5	1	7	314
Years	F	-	-	168	22	2	7	197
10 — 14	M	-	-	91	3	2	3	97
Years	F	-	-	85	4	3	3	92
15 — 19	M	-	-	59	2	2	1	63
Years	F	-	-	54	6	1	2	62
20 — 24	M	-	-	78	8	1	1	88
Years	F	-	-	99	2	7	2	110
25 — 29	M	-	-	101	7	3	3	114
Years	F	-	-	130	3	3	4	140
30 — 34	M	-	-	162	15	8	2	189
Years	F	-	-	147	8	2	3	160
35 — 39	M	-	-	96	22	8	2	128
Years	F	-	-	90	6	1	1	98
40 — 44	M	-	-	143	18	7	6	174
Years	F	-	-	139	3	1	3	146
45 — 49	M	-	-	78	27	5	7	117
Years	F	-	-	68	2	-	1	71
50 — 54	M	-	-	186	19	2	6	213
Years	F	-	-	168	4	-	1	173
55 Years	M	-	-	837	40	2	29	908
and over	F	-	-	827	13	2	16	858
Total	M	-	-	3288	201	50	79	3616
	F	-	-	2838	99	30	46	3008

6624

APPENDIX X.ANNUAL REPORT BY THE VETERINARY INSPECTOR  
FOR THE YEAR, 1932.**1. TOTAL ANIMAL DISEASES.**

The total number of animal diseases dealt with was as follows:-

Cattle and Buffaloes	...	...	280
Horses	...	...	2
Goats	...	...	3
Dogs	...	...	19
Cats	...	...	16
Fowls	...	...	9
Duck	...	...	1

In addition to the above, villages were visited and advice given when necessary.

**2. SPECIAL DISEASES.****(a) Anthrax.**

During the year 6 cases (cattle and buffaloes) were diagnosed and confirmed by blood slides.

In addition there was one suspected case (blood not available for examination).

The distribution of these cases was as follows:-

<u>District.</u>	<u>Confirmed</u>	<u>Suspected.</u>
Kota Bharu	3	—
Pasir Puteh	2	1
Ulu Kelantan	1	—
	<u>6</u>	<u>1</u>

It is difficult to enforce precautions, but all that is possible has been done by the District Officers concerned.

**(b) Rabies.**

There were two cases of rabies, one on the 6th May and another on 13th October at Kota Bharu.

The brain was sent to Medical Research Institute, Kuala Lumpur, in each case for examination.

Negri bodies were seen and animal inoculations were positive.

An order was passed that all dogs should be muzzled or tied for a period of 6 months, and instructions given to the Police to destroy all unmuzzled seen in the Municipal area of Kota Bharu and daerahs of Badang, Panji, Lundang and Kota.

832 dogs were destroyed.

**Vaccination.**

Vaccine prepared by the Medical Research Institute, Kuala Lumpur, was supplied in May.

The total number of dogs vaccinated was as follows:—

Dogs	—	adult	50
Dogs	—	pups	7
			<u>57</u>



No deleterious effects were observed in any of these.

(c) Fowl Cholera.

There was a small out-break of fowl cholera in the month of February in Kota Bharu.

All sick fowls were killed and all necessary precautions taken, and the outbreak subsided.

3. IMPORT AND EXPORT OF ANIMALS.

Import.

(a) 13 head of cattle and 6 head of buffaloes were imported from Siamese Territory, which were admitted after quarantine at Rantau Panjang, into Temangan and Pasir Mas.

(b) 4 dogs were imported into Tumpat, Krai and Semerak (2 from Pahang, 1 from Kuantan and 1 from Singapore).

(c) 1 horse was imported from Kedah into Kota Bharu.

Export.

(a) 253 head of cattle, 2 rams and 3 he-goats were exported from Tumpat to Singapore (via sea).

(b) 24 head of cattle were exported from Tumpat and Temangan to Singapore (via Gua Musang).

(c) 1 dog was exported from Tumpat to Penang (via Padang Besar).

(d) 108 pigs were exported from Pasir Mas to Singapore and Johore (via Gua Musang).

All were examined and certificates of health were given.

4. CASTRATION.

19 head of bulls were castrated by the Burdizzo method.

It is hoped to make this operation popular, as it is thought that castration of the poorer bulls will improve the breed of cattle.

5. INSPECTION OF MILCH-CATTLE SHEDS, SLAUGHTER HOUSES AND THE MARKET.

All these places were visited frequently and advice given whenever necessary.

Sd: D. R. MEHTA.

APPENDIX XI.  
VACCINATION RETURN IN THE STATE OF KELANTAN FOR THE YEAR, 1932.

Number vaccinated.						Result.					
Europeans.	Chinese.	Indians.	Malays.	Javanese.	Others.	Total.	Perfect.	Modified.	Failed.	Not seen.	Total vaccinated.
3	688	47	24880	1	182	25801	25565	36	200	—	25801

## APPENDIX XII.

### REPORT ON ANTI-MALARIAL SURVEY AT MENTUAN, KEDAI LALAT AND BACHOK.

---

Of the 20 boys found to have enlarged spleens last year in Mentuan School, 11 lived in Mentuan village, 6 in Kampong Binjai and the other 3 in Kampong Chepa.

2. Mentuan village is comparatively high up but is divided into two by a swamp (A) just beyond the school. This swamp runs down to the road where ~~there is~~ a bridge connects it in rainy weather with a second swamp (B).

3. The second swamp runs the whole length of both Mentuan and Binjai immediately behind the kampong. It joins the Pasir Tumboh river which is over half a mile from the kampong.

4. Anopheline larvae were found in numbers in both swamps but as one would expect most of these were ~~Bossi~~<sup>Rossi</sup> type though there were occasional ~~Ludlowi~~<sup>Ludlowi</sup> found in swamp A. There were many ~~Embrosus~~<sup>Embrosus</sup> found in seepage water on the slope of swamp B.

5. We were unable to catch any anopheline adult mosquitoes from the kampong houses probably due to the wind which got up every evening we were there but the most likely carrier would be ~~Ludlowi~~<sup>Ludlowi</sup>. As both the swamps A and B are extensive and used for cultivation of padi and for fishing with the result that oiling would be out of the question and arsenic and its distribution over these big area would be expensive and difficult to carry out.

6. At Kedai Lalat school, of the 8 boys with enlarged spleen,

2 were from Kedai Lalat

4 were from Kampong Babong

1 was from Kampong Malacca

1 was from Kampong Pasir To' Kambing

7. Conditions here were very similar to Mentuan, a small stream which crossed the road at the begining of the Kampong, leading to a swamp which runs the full length of the kampong seperating Kedai Lalat from K. Malacca. K. Babong is situated about one mile from Kedai Lalat on high ground and has large swamps on two sides of it. The findings were ~~Embrosus~~<sup>Embrosus</sup> in stream, ~~Rossi~~<sup>Rossi</sup> and ~~Barbirostris~~<sup>Barbirostris</sup> in the swamps. Again no adults could be caught.

8. I am afraid there is no practical solution to this problem.

9. Bachok is an entirely different proposition. All along the lagoon behind the Bachok Bungalow in crab holes and depressions we were able to collect ~~Ludlowi~~<sup>Ludlowi</sup> larvae in numbers. Adults I had no time to collect but I have no reason to doubt that ludlowi, breeding in these numbers, are the main carrying mosquito of this area.

10. The sea breeze usually holds until nearly midnight and the land breeze only rises about 3 a.m. I consider the ludlowi breeding around the lagoon are probably taken up to a mile inland and rarely ever feed on the sea side of the lagoon.

11. The remedy again is too expensive to be considered. Small fillings would be useless as the crabs would soon destroy it and only extensive fillings would be satisfactory.



J. H. BOWYER.

MEDICAL AND HEALTH OFFICER,  
KELANTAN.





